

## ***Fibroporia gossypium* isolated from an indoor environment in Argentina**

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**ABSTRACT**—Using culture studies and molecular techniques, the brown rot polypore *Fibroporia gossypium* was identified from a cellar in an old building of Buenos Aires city, the second record of the species in an urban environment in Argentina. The fungus formed large mycelial masses hanging from a wooden support and growing on the walls but did not form basidiomes. The conspecificity of specimens from distant regions is considered and the origin of the present finding is discussed.

**KEY WORDS**—multigene analysis, South America, taxonomy, wood-rotting fungus

## **Introduction**

*Fibroporia gossypium* [= *Antrodia gossypium*] is a widely distributed brown rot wood-decay basidiomycete occurring in coniferous stands in Europe (Spirin 2007, Bernicchia & al. 2012, Ryvarden & Melo 2014, Żółciak & al. 2016), North America (Lombard 1990), and Asia (Yuan & Dai 2008). It is

also found on *Nothofagus* spp. in Patagonia, Argentina (Rajchenberg 2006, Rajchenberg & al. 2011).

The species was originally described as *Poria gossypium* (holotype LPS 25495) from a specimen isolated from vine plant borders in La Plata, Buenos Aires Province, 122 years ago (Spegazzini 1898, Rajchenberg 1984, Rajchenberg & Wright 1987). After that, the species was not recorded in Argentina until studies in the southern region of the country (Rajchenberg 2006).

During summer of 2018, an extensive mycelium of a wood-decay basidiomycete was found in a basement located in the plant pathology laboratory of the School of Agriculture of the University of Buenos Aires. There was mycelium hanging from a door frame (FIG. 1A) and typical mycelial cords (rhizomorphs) were observed on the walls (FIG. 1B). The fungus was also covering the furniture (FIG. 1C) and had decayed a wooden door, made from an unidentified gymnosperm, extremely decayed, and found fallen to the floor (FIG. 1D). The basement had been formerly used as a cheese ripening chamber with an environment of high relative humidity, cool temperature, and darkness. More recently, the basement had been used as a depository for books and materials used in the dairy industry and had been abandoned for at least 15 years until the mycelium was found covering the walls, wooden shelves, door, and door-frame.

The aim of this work was to identify and to discuss the presence of *F. gossypium* growing in an indoor environment in Buenos Aires city, Argentina. This is the second urban record of the species, originally described by Spegazzini (1898) from La Plata city (ca. 60 km from Buenos Aires).

## Materials & methods

### Isolation and cultural studies

The fungus was isolated directly from the mycelium hanging from the door frame and cultured in 2% MEA, 2% PDA, yeast media and 2% water agar medium and incubated at both dark and natural light at 24 °C. The micro and morphological characteristics were observed regularly under the microscope.

The strain, named ARG\_2018\_Agro, was cultured on 1.25% MEA (Difco Lab.) in the dark at 25 °C (Nobles 1965), and macro- and micromorphological characters were recorded weekly for 6 weeks. The species was identified by means of keys based on mycelial characters (Nobles 1965, Stalpers 1978) and codified according to Nobles (1965). Oxidase reactions were performed using gallic (GAA) and tannic (TAA) acid agar media (Davidson & al. 1938) and tyrosine, p-cresol and guaiacol agar media (0.2%) according to Boidin (1954). The relative intensity of the reaction, recorded one week after incubation in the dark at 25 °C, was indicated with plus or minus signs.



FIG. 1. *Fibroporia gossypium* (ARG\_2018\_Agro), sampling site, with mycelium covering the walls, furniture, and wooden door frame. A. Conspicuous mycelial flaps hanging from the wooden frame; B, C. Mycelium and rhizomorphs covering furniture and walls; D. Wooden door rotted by the fungus.

Strain ARG\_2018\_Agro is conserved in the Department of Plant Pathology, School of Agriculture, University of Buenos Aires, Buenos Aires City (DPP FAUBA).

#### Molecular studies

The genomic DNA was extracted from 7-day-old fungal cultures grown in 2% MEA culture plates using the PuriPrep T Kit, according to the manufacturer's

instructions. Five genomic regions were included in the analyses, following Chen & al. (2017). DNA was amplified in 50 µl volumes containing 10 mM PCR buffer supplied by the manufacturer, 50 mM MgCl<sub>2</sub>, 1 mM of each dNTP, 10 mM of each primer, 1 U Recombinant Taq DNA polymerase, and 5 µl fungal genomic DNA.

The internal transcribed spacer (ITS) region of the isolates was amplified using the universal primers ITS1 and ITS4 under the following PCR conditions: denaturation at 94 °C for 3 min, 50 cycles of denaturation at 94 °C for 45 s, annealing at 57 °C for 45 s, extension at 72 °C for 1 min and a final extension at 72 °C for 7 min (Schoch & al. 2012). The nLSU regions were amplified with primer pairs LR0R and LR7 ([https://sites.duke.edu/vilgalyslab/rdna\\_primers\\_for\\_fungi/](https://sites.duke.edu/vilgalyslab/rdna_primers_for_fungi/)); the nSSU regions with the primer pair NS1 and NS4 (White & al. 1990); the mtSSU regions with the primer pair MS1 and MS2 (White & al. 1990); the *tef1* with the primer pair EF1-983F and EF1-1567R (Rehner & Buckley 2005); and *rpb2* with the primer pair bRPB2-6F and bRPB2-7R (Matheny 2005). The PCR conditions for nSSU, mtSSU, *tef1*, and *rpb2* are described in Chen & al. (2017). The PCR products were purified and sequenced at sequencing service of Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires (Argentina) and at MacroGen Sequencing Service (MacroGen, Korea), with the same primers.

#### Phylogenetic analysis

BLAST queries were performed in GenBank. As a framework for taxon selection, we used sequences of *Fibroporia* and its related genera in the antridia clade obtained by Chen & al. (2017) (TABLE 1). Two data sets were analyzed for this study: concatenated analyses of the ITS, nLSU, nSSU, mtSSU, *tef1*, and *rpb2* gene regions and the ITS region to ascertain the phylogenetic structure within the *F. gossypium-pseudoremyi* clade. Nucleotide sequences for the ITS, nLSU, nSSU, mtSSU, *tef1*, and *rpb2* gene regions were initially edited using BIOEDIT 7.0.9.0 (Hall 1999) then aligned using L-INS-i strategy as implemented in MAFFT v 7.0 (Katoh & Standley 2013) and manually adjusted using MEGA version X (Kumar & al. 2018). The final ITS data set comprised 45 sequences and 668 characters including gaps, the nLSU data set comprised 45 sequences and 1319 characters including gaps, while the mtSSU, *tef1*, and *rpb2* data sets comprised 40 each and 1015 (mtSSU), 487 (*tef1*), and 651 (*rpb2*) characters including gaps. The datasets were combined for concatenated analyses using Mesquite 3.40 (Maddison & Maddison 2018). ITS data set for the extended *Fibroporia* species analysis comprised 29 sequences and 623 characters including gaps. The best nucleotide substitution model was estimated by using the Akaike Information Criterion (AIC) (Akaike 1974) using jMODELTEST 2.2.1.1 (Guindon & Gascuel 2003, Darriba & al. 2012) and were GTR+I+G for ITS, nLSU, nSSU, and *rpb2*; GTR+G for mtSSU; and TIMeF+I+G for *tef1*. Maximum likelihood (ML) phylogenetic trees for the combined data was estimated under these models in RAxML 7.2.8 (Stamatakis 2014), using the default parameters, executed on the CIPRES (Cyberinfrastructure for Phylogenetic Research) Science Gateway V.3.1 ([http://www.phylo.org/sub\\_sections/portal/](http://www.phylo.org/sub_sections/portal/), Miller & al. 2010) with bootstrap support values (MLB) calculated with 1000 repetitions, and Bayesian



TABLE 1. Sequences of *Fibroporia* and related genera used in the molecular analyses.

| TAXON                        | VOUCHER    | ORIGIN  | GENBANK ACCESSION NUMBER |          |          |          |          |          | REFERENCE                         |
|------------------------------|------------|---------|--------------------------|----------|----------|----------|----------|----------|-----------------------------------|
|                              |            |         | ITS                      | NLSU     | NSSU     | MTSSU    | TEF1     | RPB2     |                                   |
| <i>Amyloporia xantha</i>     | Cui 11544  | China   | KR605817                 | KR605756 | KR605918 | KR606018 | KR610746 | KR610836 | Han & al. 2016                    |
| <i>Antrodia heteromorpha</i> | Dai 12755  | USA     | KP715306                 | KP715322 | KR605908 | KR606009 | KP715336 | KR610828 | Chen & Cui 2015<br>Han & al. 2016 |
| <i>Antrodia serialis</i>     | Cui 10519  | China   | KP715307                 | KP715323 | KR605911 | KR606011 | KP715337 | KR610830 | Han & al. 2016                    |
|                              | Cui 9706   | China   | KR605811                 | KR605750 | KR605910 | KR606010 | KR610741 | KR610829 | Han & al. 2016                    |
| <i>Antrodia serpens</i>      | Dai 7465   | China   | KR605813                 | KR605752 | KR605913 | KR606013 | KR610742 | KR610832 | Han & al. 2016                    |
| <i>Antrodia tanakae</i>      | Cui 9743   | China   | KR605814                 | KR605753 | KR605914 | KR606014 | KR610743 | KR610833 | Han & al. 2016                    |
| <i>Daedalea dickinsii</i>    | Yuan 1090  | China   | KR605790                 | KR605729 | KR605878 | KR605981 | KR610711 | KR610802 | Han & al. 2016                    |
| <i>Daedalea quercina</i>     | Dai 12659  | Finland | KP171208                 | KP171230 | KR605887 | KR605990 | KR610719 | KR610810 | Han & al. 2015;<br>2016           |
| <i>Fibroporia albicans</i>   | Cui 9464   | China   | KC456250                 | KR605758 | KR605920 | KR606019 | KR610748 | KR610838 | Chen & al. 2015                   |
|                              | Cui 9495   | China   | KC456252                 | KU550484 | KU550524 | KU550505 | KU550557 | KU550542 | Chen & al. 2015;<br>2017          |
|                              | Cui 9504   | China   | KC456251                 | KU550485 | KU55052  | KU550504 | KU550558 | KU550543 | Chen & al. 2017                   |
|                              | Dai 10595  | China   | KC456249                 | KR605759 | KR605921 | KR606020 | KR610749 | KR610839 | Chen & al. 2015                   |
|                              | Dai 16210  | China   | KU550479                 | KU550486 | KU550526 | KU550506 | KU550559 | KU550544 | Chen & al. 2017                   |
| <i>Fibroporia bambusae</i>   | Dai 16211  | China   | KU550480                 | KU550487 | KU550527 | KU550507 | KU550560 | KU550545 | Chen & al. 2017                   |
|                              | Dai 16212  | China   | KU550481                 | KU550488 | KU550528 | KU550508 | KU550561 | KU550546 | Chen & al. 2017                   |
|                              | BJFC 12750 | Czechia | KT895883                 | KU550489 | KU550529 | KU550509 | KU550562 | KT895900 | Chen & al. 2017                   |
| <i>Fibroporia ceracea</i>    | Dai 13013  | China   | KU550476                 | KU550490 | KU550530 | KU550510 | KU550563 | KU550547 | Chen & al. 2017                   |

| TAXON                          | VOUCHER          | ORIGIN    | GENBANK ACCESSION NUMBER |          |          |          |          |          | REFERENCE                |
|--------------------------------|------------------|-----------|--------------------------|----------|----------|----------|----------|----------|--------------------------|
|                                |                  |           | ITS                      | NLSU     | NSSU     | MTSSU    | TEF1     | RPB2     |                          |
| <i>Fibroporia citrina</i>      | CLZhao 2308      | China     | MH114651                 | ---      | ---      | ---      | ---      | ---      | Zhao [unpub.]            |
|                                | HUBO 7715        | Italy     | GU991573                 | ---      | ---      | ---      | ---      | ---      | Bernicchia & al. 2012    |
| <i>Fibroporia gossypium</i>    | Cui 11604        | China     | KU550473                 | KU550492 | KU550533 | KU550512 | KU550568 | KU550551 | Chen & al. 2017          |
|                                | Cui 9683         | China     | KC456253                 | KU550491 | KU550531 | KU550511 | KU550564 | KU550548 | Chen & al. 2017          |
|                                | HUBO 7724        | Italy     | HM590880                 | ---      | ---      | ---      | ---      | ---      | Bernicchia & al. 2012    |
|                                | Cui 9472         | China     | KU550474                 | KU550494 | KU550534 | KU550514 | KU550567 | KU550550 | Chen & al. 2017          |
|                                | LY BR 3914       | France    | KU550475                 | KU550495 | ---      | KU550515 | KU550569 | KU550552 | Chen & al. 2017          |
|                                | LY BR 3994       | Argentina | KT895885                 | KU550496 | KU550535 | KU550516 | KU550570 | KT895902 | Chen & al. 2017          |
|                                | X1403            | Finland   | KC595905                 | ---      | ---      | ---      | ---      | ---      | Ortiz-Santana & al. 2013 |
|                                | CIEFAP 131       | Argentina | JF713075                 | ---      | ---      | ---      | ---      | ---      | Rajchenberg & al. 2011   |
|                                | FG2011           | Poland    | KF725876                 | ---      | ---      | ---      | ---      | ---      | Żółciak & al. 2016       |
|                                | ARG_2018_Agro    | Argentina | MT274740                 | MT162434 | MT162453 | MT176423 | MT333221 | MT292789 | <b>This study</b>        |
| <i>Fibroporia norrlandica</i>  | 4115             | Finland   | KC595907                 | KC595907 | ---      | ---      | ---      | ---      | Han & al. 2014           |
|                                | 4122             | Finland   | KC595908                 | KC595908 | ---      | ---      | ---      | ---      | Ortiz-Santana & al. 2013 |
| <i>Fibroporia pseudorennyi</i> | UC2022910        | USA       | KP814248                 | ---      | ---      | ---      | ---      | ---      | Rosenthal & al. 2017     |
|                                | X1377            | France    | KC595927                 | KC595927 | ---      | ---      | ---      | ---      | Ortiz-Santana & al. 2013 |
|                                | X1384 (holotype) | Russia    | KC595928                 | KC595928 | ---      | ---      | ---      | ---      | Ortiz-Santana & al. 2013 |

| TAXON                              | VOUCHER       | ORIGIN | GENBANK ACCESSION NUMBER |          |          |          |          |          | REFERENCE                          |
|------------------------------------|---------------|--------|--------------------------|----------|----------|----------|----------|----------|------------------------------------|
|                                    |               |        | ITS                      | NLSU     | NSSU     | MTSSU    | TEF1     | RPB2     |                                    |
| <i>Fibroporia radiculosa</i>       | Cui 11404     | China  | KP145011                 | KR605760 | KR605922 | KR606021 | KR610750 | KR610840 | Chen & al. 2015,<br>Han & al. 2016 |
|                                    | Cui 2796      | China  | KC456247                 | KU550497 | KU550536 | KU550517 | KU550571 | KU550553 | Chen & al. 2017                    |
|                                    | Dai 13041     | China  | KP145010                 | KU550499 | KU550538 | KU550519 | KU550573 | KU550554 | Chen & al. 2017                    |
|                                    | Dai 6473      | China  | FJ644283                 | KU550498 | KU550537 | KU550518 | KU550572 | KT895899 | Chen & al. 2017                    |
| <i>Fibroporia vaillantii</i>       | FP 90877 R    | USA    | KC585345                 | KC585170 | ---      | ---      | ---      | ---      | Ortiz-Santana & al.<br>2013        |
|                                    | RWD 63 263    | USA    | KC585346                 | KC585172 | ---      | ---      | ---      | ---      | Ortiz-Santana & al.<br>2013        |
| <i>Fomitopsis pinicola</i>         | Cui 10312     | China  | KR605781                 | KR605720 | KR605856 | KR605960 | KR610689 | KR610780 | Han & al. 2016                     |
| <i>Laetiporus sulphureus</i>       | Dai 12154     | China  | KF951295                 | KF951302 | KR605924 | KR606023 | KR610752 | KR610841 | Song & al. 2014,<br>Han & al. 2016 |
|                                    | Dai 12826     | China  | KR605819                 | KR605762 | KR605925 | KR606024 | KR610753 | KR610842 | Han & al. 2016                     |
| <i>Oligoporus lacteus</i>          | Cui 12206     | China  | KR605820                 | KR605763 | KR605926 | KR606025 | KR610754 | KR610843 | Han & al. 2016                     |
| <i>Piptoporus betulinus</i>        | Cui 10756     | China  | KR605797                 | KR605736 | KR605894 | KR605997 | KR610725 | KR610815 | Han & al. 2016                     |
| <i>Piptoporus soloniensis</i>      | Cui 11390     | China  | KR605803                 | KR605742 | KR605901 | KR606003 | KR610733 | KR610822 | Han & al. 2016                     |
|                                    | Dai 11872     | China  | KR605804                 | KR605743 | KR605902 | KR606004 | KR610731 | KR610823 | Han & al. 2016                     |
| <i>Postia duplicata</i>            | Cui 10366     | China  | KF699124                 | KJ684975 | KR605927 | KR606026 | KR610755 | KR610844 | Shen & al. 2015,<br>Han & al. 2016 |
| <i>Pseudofibroporia citrinella</i> | He20120721-15 | China  | KU550477                 | KU550500 | KU550539 | KU550520 | KU550574 | KU550555 | Chen & al. 2017                    |
|                                    | Yuan 6181     | China  | KU550478                 | KU550501 | KU550540 | KU550521 | KU550575 | KU550556 | Chen & al. 2017                    |
| <i>Trametes polyzona</i>           | Cui 11040     | China  | KR605824                 | KR605767 | KR605932 | KR606029 | KR610760 | KR61084  | Han & al. 2016                     |
| <i>Trametes suaveolens</i>         | Cui 11586     | China  | KR605823                 | KR605766 | KR605931 | KR606028 | KR610759 | KR610848 | Han & al. 2016                     |

inferences (BI) of phylogenies in MrBayes v.2.2 (Ronquist & al. 2012). Four independent chains were run for 8 million generations; trees were sampled every 1000 generations. Log files for each run were viewed in Tracer v1.6.0 (<http://evolve.zoo.ox.ac.uk/software.html/tracer/>) to determine convergence. Trees generated prior to stationarity were discarded, and the remainder of the trees was summarized in a majority rule consensus tree from the four independent runs. Branch support was assessed using posterior probabilities (BPP) calculated from the posterior set of trees after stationarity was reached. Sequences of *Trametes suaveolens* (L.) Fr. (Cui 11586) and *Trametes polyzona* (Pers.) Justo (Cui 1104042) were used as outgroup in the concatenated analyses of the ITS, nLSU, nSSU, mtSSU, tef1 and rpb2 gene regions and sequences of *Pseudofibroporia citronella* Yuan Y. Chen & B.K. Cui (He 20120721-15 and Yuan 6181) were used as outgroup in the ITS region analyses. The final alignments were deposited in TreeBASE (<http://www.treebase.org>), under accession ID25872.

## Taxonomy

***Fibroporia gossypium*** (Speg.) Parmasto,

Consp. System. Corticiac.: 207. 1968.

Figs 1, 2

≡ *Poria gossypium* Speg., Anales Mus. Nac. Buenos Aires 6: 169. 1898.

≡ *Antrodia gossypium* (Speg.) Ryvarden, Norweg. J. Bot. 20: 8. 1973.

Nobles culture code: 1.3.7.34.35.36.38.43.51.55.

**GROWTH CHARACTERISTICS:** Mats white, cottony, loose at first, appressed during the second week, powdery in the following weeks; margins distinct, even, or finely fimbriate; odorless; reverse unchanged; the colony reaching a radius of 17 mm after 7 da on 1.25% MEA, covering the plate in three weeks; oxidase reactions negative, GAA at 7 da 25–27 mm in diam, no growth on TAA.

**HYPHAL CHARACTERISTICS:** all hyphae staining in phloxine, thin-walled, mostly clamped with single clamps, rarely simple-septate, (2.5–)3.5–5(–6) µm diam. Crystals present from the first week, 3–4 × 2–3 µm. From the second week terminal chlamydospores 5–7(–11) × 4–6 µm and arthrospores (6–)9–15(–28) × 2–4 µm, very abundant at the sixth week.

**SPECIMEN EXAMINED:** ARGENTINA, BUENOS AIRES CITY, University of Buenos Aires, School of Agriculture, 34°35'30"S 58°28'46"W, basement wood-decay, December 2018, F. J. Sautua (DPP FAUBA ARG\_2018\_Agro).

**COMMENTS:** The description does not completely agree with Lombard (1990; as *Antrodia "gossypia"*) and the southern Argentina specimens studied by Rajchenberg (2006), because those strains showed few clamped hyphae, there was no mention of the presence of chlamydospores or arthrospores,

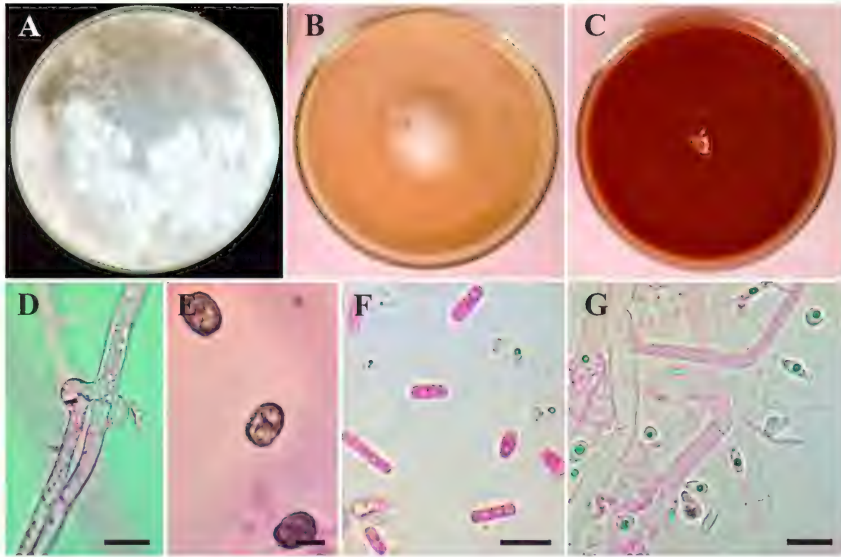


FIG. 2. *Fibroporia gossypium* (ARG\_2018\_Agro), cultural characteristics. A. Six-week-old culture; B. GAA medium; C. TAA medium; D. Clamp connections; E. Crystals; F. Arthrospores; G. Chlamydospores. Scale bars = 10  $\mu$ m.

and growth was very slow, covering the plates after only after 7 weeks of incubation. However, Spirin (2007) noted that one specimen of *F. gossypium* (LE 210088) had thick-walled chlamydospores in the subiculum.

After a four-month incubation in 2% MEA, 2% PDA, yeast media, and 2% water agar medium, whether cultured in the dark or in natural light, there was no production of basidiomes.

### Phylogeny

Phylogenetic analyses based on the ITS and the combined concatenated data set ITS + nLSU + nSSU + mtSSU + *tef1* + *rpb2* for the antrodia clade (FIGS. 3, 4) clustered strain ARG\_2018\_Agro and two Argentinian specimens [CIEFAP 131 from Chubut and CIEFAP M. Rajchenberg 11443 from Tierra del Fuego (Ushuaia, Tierra Mayor, in pure *Nothofagus pumilio* forests, on fallen trunk, 22 March 1998; duplicate as LY-BR 3994, cf. Chen & al. 2017] within the monophyletic group *F. gossypium* that includes *F. gossypium* and *F. pseudorennnyi* (BPP = 1.0, MLB = 0.99, FIG. 3; BPP = 1.0, MLB = 0.95, FIG. 4).

## Discussion

Molecular analysis led to the identification of the ARG\_2018\_Agro strain found in the humid basement as the decay basidiomycete *Fibroporia gossypium*. The cultural characters showed, on the other hand, differences from previous descriptions of this species, in particular an absence of chlamydospores or arthrospores, fewer clamped hyphae, and slower growth (Lombard 1990, Rajchenberg 2006). Cultural features have facilitated separation and identification of different basidiomycete groups (Nobles 1965, Stalpers 1978); however, conflicting characters have also been noticed in such cultural studies.

Strain ARG\_2018\_Agro produced a brown rot decay, as indicated by the substrate from which it was isolated and the tannic acid agar media results. *Fibroporia gossypium* has already been associated with gymnosperms in the Northern Hemisphere and on *Nothofagus* sp. in the Patagonian Andes forests of Argentina (Rajchenberg 2006).

Spegazzini described the original material of *Poria gossypium* from border plants of (cultivated) vines near La Plata city: “Hab. In ollis vinariis ad plantas colendas adhibitibus, in La Plata, aest. 1890 (leg. Cl. Fl. Ameghino)” (Spegazzini 1898), although he wrote on holotype envelope: “In limis plantarum, Fl. Ameghino, Aest. 1890” (Rajchenberg & Wright 1987). This exotic environment and host present the unusual situation of a taxon that was first described from a strange habit while it was naturally growing in other situations. While the species was widely recorded in the Northern Hemisphere (e.g., Lowe 1966, Núñez & Ryvarden 2001, Dai & Niemelä 2002, Ryvarden & Melo 2014), it was only recorded from the Southern Hemisphere from Patagonia, Argentina, many years later, there growing exclusively on fallen trunks and branches of different *Nothofagus* spp. (Rajchenberg 2006), contrasting with other geographical areas where it is mainly recorded on coniferous wood. The taxon is unknown from other austral continents.

How did this taxon arrive and profusely develop its mycelium in a cellar-like, indoor environment? We have no answer to that. An exotic origin is a possible explanation. Certainly, its dissemination and arrival seem to be an anomaly, as the species is not present as such in Buenos Aires city and is not associated with the introduced tree species planted in the city's groves (Robles & al. 2011, 2015). Its establishment and profuse growth has most possibly been encouraged by the still environment and optimum temperatures present in the abandoned room where it developed.

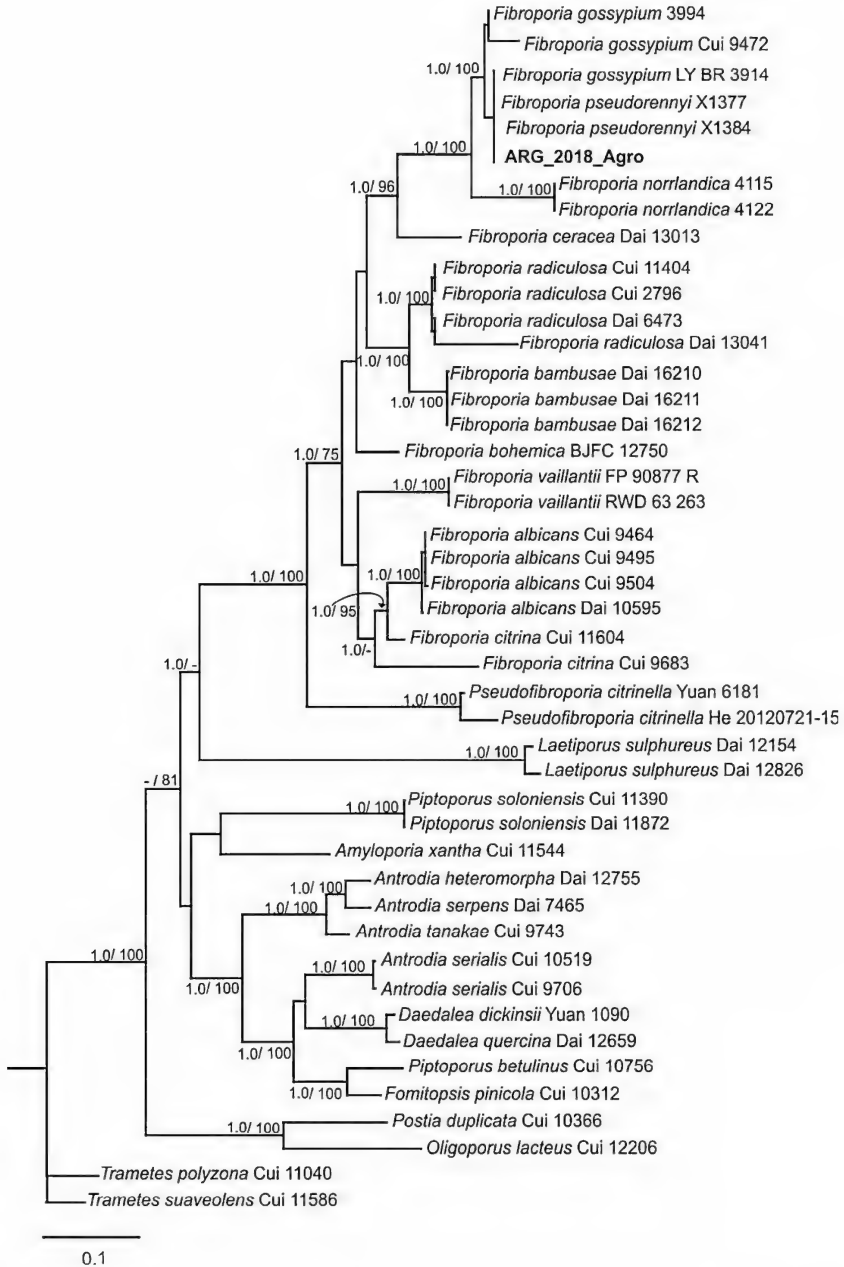


FIG. 3. ML tree based on the combined concatenated data of ITS + nLSU + nSSU + mtSSU + tef1 + rpb2 including 45 sequences. BPP >0.95 and MLB >50% are marked above the nodes.



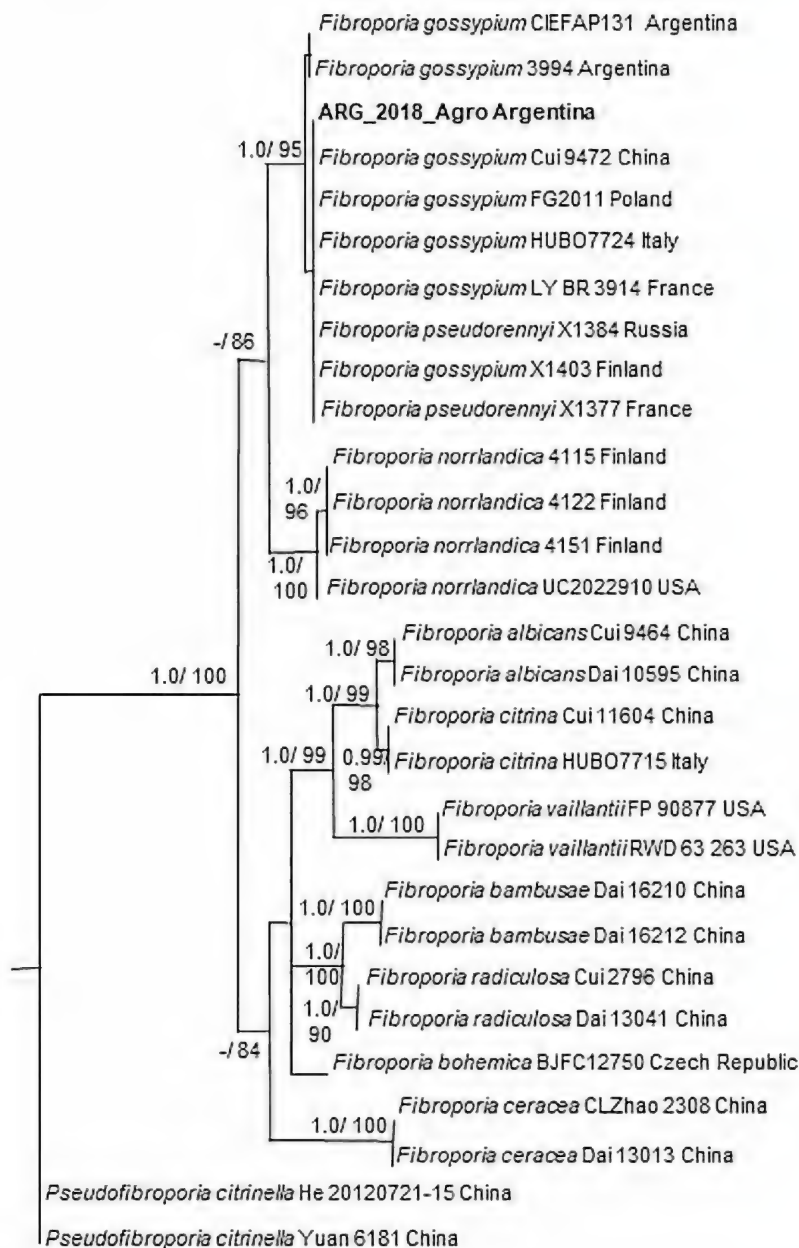


FIG. 4. The 50% majority-rule consensus tree from Bayesian inference of the ITS region including 29 sequences. BPP >0.95 and MLB >75% are marked above the nodes.

*Leptoporus destructor* var. *resupinatus* Bourdot & Galzin (1928: 547) was accepted as a form of *Fibroporia gossypium* by Lowe (1966, as *Poria gossypium*), Parmasto (1968, as *F. gossypium*), Domański (1972, as *F. gossypium*) and Ryvarden (1976, as *Antrodia gossypium*), growing on mine poles where environmental conditions are constant. The type species of *Fibroporia*, *F. vaillantii* (DC.) Parmasto, another “mine” fungus, is also associated with mine timber and affected wood in deteriorated buildings (Wainwright 1999, Cojocariu & al. 2007).

Spirin described *Fibroporia pseudorennyi* (Spirin) Spirin [ $\equiv$  *Oligoporus pseudorennyi* Spirin] as phylogenetically close to *F. gossypium* but with smaller spores and lacking cystidia (Spirin 2004, 2007). *Fibroporia pseudorennyi* also produced chlamydospores ((6–)8–10  $\times$  6–7.5  $\mu$ m) in the basidiome margin; currently there are no cultural descriptions of *F. pseudorennyi*. Given the phylogenetic results of the present study and those of Chen & al. (2017) based on five genomic regions, the synonymy of *F. gossypium* and *F. pseudorennyi* is maintained (cf. Ryvarden & Melo 2014).

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